# Novelty Assessment Report

**Paper**: Variational Inference for Cyclic Learning
**PDF URL**: https://openreview.net/pdf?id=c1jWNZ1Zqg
**Venue**: ICLR 2026 Conference Submission
**Year**: 2026
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## Abstract

Cyclic learning, which involves training with pairs of inverse tasks and utilizes cycle-consistency in the design of loss functions, has emerged as a powerful paradigm for weakly-supervised learning. However, its potential remains under-explored due to the current methods' narrow focus on domain-specific implementations. In this work, we develop generalized solutions for both pairwise cycle-consistent tasks and self-cycle-consistent tasks. By formulating cross-domain mappings as conditional probability functions, we reformulate the cycle-consistency objective as an evidence lower bound optimization problem via variational inference. Based on this formulation, we further propose two training strategies for arbitrary cyclic learning tasks: single-step optimization and alternating optimization. Our framework demonstrates broad applicability across diverse tasks. In unpaired image translation, it not only provides a theoretical justification for CycleGAN but also leads to CycleGN—a competitive GAN-free alternative. For unsupervised tracking, CycleTrack and CycleTrack-EM achieve state-of-the-art performance on multiple benchmarks. This work establishes the theoretical foundations of cyclic learning and offers a general paradigm for future research.

## Core Task Landscape

This paper addresses: **Cyclic Learning with Cycle-Consistency Constraints for Weakly-Supervised Tasks**
A total of **50 papers** were analyzed and organized into a taxonomy with **26 categories**.

### Taxonomy Overview

The research landscape has been organized into the following main categories:

- **Cross-Modal Correspondence and Translation**
- **Semantic Segmentation and Localization**
- **Temporal and Spatial Correspondence Learning**
- **Image Quality Enhancement and Restoration**
- **Domain Adaptation and Cross-Domain Learning**
- **Representation Learning and Feature Extraction**
- **Specialized Application Domains**

### Complete Taxonomy Tree

- Cyclic Learning with Cycle-Consistency Constraints for Weakly-Supervised Tasks Survey Taxonomy
- Cross-Modal Correspondence and Translation
  - Vision-Language Grounding and Captioning ★ (4 papers)
  - [0] Variational Inference for Cyclic Learning (Anon et al., 2026) View paper
  - [1] Cycle-consistency learning for captioning and grounding (Wang Ning, 2024) View paper
  - [5] Cycle-consistent weakly supervised visual grounding with individual and contextual representations (Ruisong Zhang, 2023) View paper
  - [18] Exploring Temporal Event Cues for Dense Video Captioning in Cyclic Co-Learning (Yang Yan, 2025) View paper
  - 2D-3D Modality Translation (2 papers)
  - [14] Cycle-Consistent Generative Rendering for 2D-3D Modality Translation (Aumentado-Armstrong, 2020) View paper
  - [15] A multi-centric evaluation of self-learning GAN based pseudo-CT generation software for low field pelvic magnetic resonance imaging (J. Prunaretty, 2023) View paper
  - Sketch and Image Translation (1 papers)
  - [21] Learning to sketch with shortcut cycle consistency (Jifei Song, 2018) View paper
  - Text Style and Image Manipulation (2 papers)
  - [19] Self-supervised Text Style Transfer Using Cycle-Consistent Adversarial Networks (Moreno La Quatra, 2024) View paper
  - [33] Target-Free Text-guided Image Manipulation (Fan, 2022) View paper
- Semantic Segmentation and Localization
  - Medical Image Segmentation (5 papers)
  - [2] CAM-CycleGAN: A Weakly Supervised Segmentation Method for Medical Images Based on Cycle Consistensy Generative Adversarial Networks (Jingyi Wang, 2024) View paper
  - [3] Consistency label-activated region generating network for weakly supervised medical image segmentation (Wei Du, 2024) View paper
  - [26] HeartUnloadNet: A Weakly-Supervised Cycle-Consistent Graph Network for Predicting Unloaded Cardiac Geometry from Diastolic States (Mu Siyu, 2025) View paper
  - [28] CPNet: Cycle Prototype Network for Weakly-supervised 3D Renal Compartments Segmentation on CT Images (Song Wang, 2021) View paper
  - [50] All-Around Real Label Supervision: Cyclic Prototype Consistency Learning for Semi-Supervised Medical Image Segmentation. (Zhe Xu, 2022) View paper

- Data Generation and Augmentation (2 papers)
- [34] Neural Data-to-Text Generation with LM-based Text Augmentation (Ernie Chang, 2021) View paper
- [36] Weakly-supervised Generative Adversarial Networks for medical image classification (Jiawei Mao, 2021) View paper
- Reinforcement Learning and Dynamics Estimation (2 papers)
- [38] Weakly-supervised learning of human dynamics (Zell, 2020) View paper
- [47] PlayVirtual: Augmenting Cycle-Consistent Virtual Trajectories for Reinforcement Learning (Yu Tao, 2021) View paper
- 3D Point Cloud Understanding (1 papers)
- [46] Image Understands Point Cloud: Weakly Supervised 3D Semantic Segmentation via Association Learning (Tianfang Sun, 2024) View paper

## Narrative

Core task: Cyclic learning with cycle-consistency constraints for weakly-supervised tasks. The field leverages bidirectional mappings between domains or modalities to enforce self-supervision when labeled data is scarce or expensive. The taxonomy reveals several major branches: Cross-Modal Correspondence and Translation addresses vision-language grounding, image-to-image translation, and multimodal alignment; Semantic Segmentation and Localization applies cycle constraints to produce pixel-level annotations from weak labels; Temporal and Spatial Correspondence Learning focuses on matching across video frames or geometric transformations; Image Quality Enhancement and Restoration uses cyclic structures for denoising, super-resolution, and artifact removal; Domain Adaptation and Cross-Domain Learning transfers knowledge across different data distributions; Representation Learning and Feature Extraction builds robust embeddings via reconstruction cycles; and Specialized Application Domains targets niche problems in medical imaging, remote sensing, and industrial inspection. Representative works such as Temporal Cycle Consistency[6] and Cycle MultiGraph Matching[7] illustrate how cycle constraints can enforce temporal or structural coherence, while CAM CycleGAN Segmentation[2] and Weakly RGBD Saliency[4] demonstrate their utility in segmentation pipelines.

A particularly active line of work centers on vision-language grounding, where methods like Cycle Captioning Grounding[1] and Cycle Weakly Grounding[5] use caption-to-region and region-to-caption cycles to align textual descriptions with visual content without exhaustive bounding-box annotations. Another contrasting direction involves domain adaptation and image translation, where techniques such as Defect Template CycleGAN[9] and Weakly Defect CycleGAN[41] apply cycle-consistency to synthetic-to-real transfer in industrial settings. The original paper, Variational Cyclic Learning[0], sits within the vision-language grounding cluster and shares the same emphasis on cross-modal alignment as Cycle Captioning Grounding[1] and Cycle Weakly Grounding[5]. However, it introduces a variational framework that may offer probabilistic modeling advantages over deterministic cycle mappings, potentially addressing uncertainty in weakly-supervised scenarios where one-to-many correspondences arise. This positions it as a methodological refinement within an already dense branch of cross-modal correspondence research.

## Related Works in Same Category

The following **3 sibling papers** share the same taxonomy leaf node with the original paper:

### 1. Cycle-consistency learning for captioning and grounding

**Authors**: Wang Ning, Ning Wang, Deng Jia-Jun, Jiajun Deng, Jia, et al. (7 authors total) | **Year/Venue**: 2024 | **URL**: View paper

#### Abstract

We present that visual grounding and image captioning, which perform as two mutually inverse processes, can be bridged together for collaborative training by careful designs. By consolidating this idea, we introduce CyCo, a cyclic-consistent learning framework to ameliorate the independent training pipelines of visual grounding and image captioning. The proposed framework (1) allows the semi-weakly supervised training of visual grounding; (2) improves the performance of fully supervised visual g...

#### Relationship Analysis

Both papers belong to the Vision-Language Grounding and Captioning category, employing cyclic training between grounding and captioning tasks to align visual regions with textual descriptions. They share the core approach of using cycle-consistency constraints to enable weakly-supervised learning by treating grounding and captioning as inverse tasks. The key difference is that the original paper (Variational Inference for Cyclic Learning) develops a general variational inference framework with ELBO optimization and EM-based training applicable across diverse cyclic learning domains, while the candidate paper (CyCo) focuses specifically on the grounding-captioning application with practical semi-weakly supervised training strategies and weight-sharing architectures.

### 2. Cycle-consistent weakly supervised visual grounding with individual and contextual representations

**Authors**: Ruisong Zhang, Chuang Wang, Cheng-Lin Liu, Chuan Wang | **Year/Venue**: 2023 | **URL**: View paper

#### Abstract

Visual grounding, aiming to align image regions with textual queries, is a fundamental task for cross-modal learning. We study the weakly supervised visual grounding, where only image-text pairs at a coarse-grained level are available. Due to the lack of fine-grained correspondence information, existing approaches often encounter matching ambiguity. To overcome this challenge, we introduce the cycle consistency constraint into region-phrase pairs, which strengthens correlated pairs and weakens u...

#### Relationship Analysis

Both papers belong to the Vision-Language Grounding and Captioning category, utilizing cycle-consistency constraints for weakly-supervised cross-modal alignment. The candidate paper focuses specifically on weakly supervised visual grounding by introducing cycle consistency between region-phrase pairs and employing parallel individual and contextual representations to resolve matching ambiguity. In contrast, the original paper develops a generalized variational inference framework for cyclic learning across multiple domains (including but not limited to vision-language tasks), proposing both single-step and EM-based optimization strategies with theoretical foundations in probabilistic modeling rather than focusing solely on grounding-captioning cycles.

### 3. Exploring Temporal Event Cues for Dense Video Captioning in Cyclic Co-Learning

**Authors**: Yang Yan, Zhuyang Xie, Yan Yang, Wang Jie, YanKai Yu, et al. (10 authors total) | **Year/Venue**: 2025 | **URL**: View paper

#### Abstract

Dense video captioning aims to detect and describe all events in untrimmed videos. This paper presents a dense video captioning network called Multi-Concept Cyclic Learning (MCCL), which aims to: (1) detect multiple concepts at the frame level and leverage these concepts to provide temporal event cues; and (2) establish cyclic co-learning between the generator and the localizer within the captioning network to promote semantic perception and event localization. Specifically, weakly supervised co...

#### Relationship Analysis

Both papers belong to the Vision-Language Grounding and Captioning category, employing cyclic training mechanisms to align visual and textual modalities. The original paper (Variational Inference for Cyclic Learning) develops a general probabilistic framework using variational inference for arbitrary cyclic learning tasks, including image translation and tracking, while the candidate paper (MCCL)

focuses specifically on dense video captioning by establishing cyclic co-learning between a generator and localizer to mutually enhance semantic perception and event localization. The key difference is that the original paper provides a theoretical foundation applicable across diverse cyclic tasks, whereas MCCL applies cyclic principles specifically to video captioning with concept detection and retrieval-enhanced features.

# Contributions Analysis

**Overall novelty summary.** The paper proposes a unified variational probabilistic framework for cyclic learning, formulating cycle-consistency as an evidence lower bound optimization problem. It resides in the Vision-Language Grounding and Captioning leaf, which contains four papers including the original work. This leaf sits within the broader Cross-Modal Correspondence and Translation branch, one of seven major research directions in the taxonomy. The vision-language grounding cluster represents a moderately populated area, with sibling works like Cycle Captioning Grounding and Cycle Weakly Grounding addressing similar cross-modal alignment problems using cycle-consistency constraints.

The taxonomy reveals neighboring research directions that share methodological overlap but differ in application domain. The 2D-3D Modality Translation and Sketch-Image Translation leaves address cross-modal mappings with geometric or artistic constraints, while the broader Semantic Segmentation branch applies cycle-consistency to pixel-level annotation tasks. The Temporal and Spatial Correspondence Learning branch focuses on alignment across time or geometric transformations rather than modality boundaries. The paper's variational formulation potentially bridges these areas by providing a probabilistic foundation applicable beyond vision-language tasks, though its empirical validation centers on image translation and tracking.

Among twenty-three candidates examined through semantic search and citation expansion, none clearly refute the three identified contributions. The unified variational framework examined three candidates with zero refutations; the two training strategies examined ten candidates with zero refutations; and the theoretical justification with practical applications examined ten candidates with zero refutations. This suggests that within the limited search scope, the probabilistic reformulation and training strategies appear distinct from existing deterministic cycle-consistency methods. However, the search scale of twenty-three papers represents a narrow sample of the broader cyclic learning literature, leaving open the possibility of relevant prior work outside the top semantic matches.

The analysis indicates that the paper introduces methodological innovations within an established research area. The variational perspective on cycle-consistency appears underexplored in the examined literature, though the fundamental concept of cyclic training is well-represented across multiple taxonomy branches. The limited search scope—twenty-three candidates from semantic retrieval—means this assessment reflects novelty relative to closely related work rather than an exhaustive field survey. A more comprehensive literature review would be needed to assess whether similar probabilistic formulations exist in adjacent domains or earlier theoretical work.

This paper presents **3 main contributions**, each analyzed against relevant prior work:

## Contribution 1: Unified variational probabilistic framework for cyclic learning

**Description**: The authors establish the first variational probabilistic framework that unifies both paired and self-cyclic tasks by treating intermediate points as latent variables and reformulating cycle-consistency as an ELBO optimization problem through variational inference.

This contribution was assessed against **3 related papers** from the literature. Papers with potential prior art are analyzed in detail with textual evidence; others receive brief assessments.

### 1. Unsupervised variational domain adaptation
**URL**: View paper

**Brief Assessment**

Unsupervised Variational Adaptation[51] focuses on cross-domain generative models with category-level feature alignment via ELBO optimization, but does not address cyclic learning tasks or cycle-consistency constraints that are central to the original contribution.

### 2. Global Variational Inference Enhanced Robust Domain Adaptation
**URL**: View paper

**Brief Assessment**

Global Variational Adaptation[52] focuses on domain adaptation with global priors for cross-domain alignment, not on establishing a variational framework for cycle-consistent cross-domain mappings with intermediate points as latent variables.

### 3. Cross-modal domain adaptation for cost-efficient visual reinforcement learning
**URL**: View paper

**Brief Assessment**

Cross Modal Adaptation[53] focuses on cross-modal domain adaptation for visual RL (mapping images to states), not on establishing a unified framework for cyclic learning tasks. The paper uses variational inference for a different purpose (domain adaptation) rather than unifying paired and self-cyclic tasks through cycle-consistency as ELBO optimization.

## Contribution 2: Two theoretically-grounded training strategies for cyclic learning

**Description**: The authors derive two optimization methods: a single-step variational loss for stable training with explicit distributions, and a KL-free EM-based algorithm compatible with complex distributions, both applicable to general cyclic learning tasks.

This contribution was assessed against **10 related papers** from the literature. Papers with potential prior art are analyzed in detail with textual evidence; others receive brief assessments.

### 1. Variational autoencoder-based learning intrinsic periodic-trend representations of power load series for short-term forecasting
**URL**: View paper

**Brief Assessment**

Variational Periodic Load[73] focuses on variational autoencoders for power load forecasting with periodic-trend decomposition, not on optimization strategies for general cyclic learning tasks.

### 2. Ultra-short term wind power prediction based on quadratic variational mode decomposition and multi-model fusion of deep learning
**URL**: View paper

**Brief Assessment**

Quadratic Variational Wind[68] focuses on wind power prediction using variational mode decomposition for time-series forecasting, not on optimization strategies for cyclic learning tasks or cross-domain mappings.

### 3. A fault information-guided variational mode decomposition (FIVMD) method for rolling element bearings diagnosis

**URL**: View paper

**Brief Assessment**

Fault Variational Decomposition[65] focuses on signal processing for bearing fault diagnosis using variational mode decomposition, not on optimization strategies for cyclic learning tasks or machine learning frameworks.

### 4. GCVIF: Pioneering Explainable Domain-Shared Representation Learning for Fault Signal Detection in Multiple Working States Simultaneously

**URL**: View paper

**Brief Assessment**

GCVIF[69] focuses on fault signal detection using generalized-gaussian cyclic variational inference for domain adaptation, not on general cyclic learning optimization strategies or EM-based algorithms for cycle-consistency tasks.

### 5. Deep Incomplete Multi-view Learning via Cyclic Permutation of VAEs

**URL**: View paper

**Brief Assessment**

Cyclic Permutation VAE[66] focuses on multi-view representation learning with incomplete data using permutations of VAEs, not on general cyclic learning optimization strategies. The candidate addresses view-specific missing data problems rather than cross-domain cyclic mappings.

### 6. Towards symmetry-aware generation of periodic materials

**URL**: View paper

**Brief Assessment**

Symmetry Periodic Materials[71] focuses on generating periodic materials using variational autoencoders and score-based diffusion models for crystal structures, not on general cyclic learning optimization strategies.

### 7. CIRSM-Net: A Cyclic Registration Network for SAR and Optical Images

**URL**: View paper

**Brief Assessment**

CIRSM Net[67] focuses on SAR-optical image registration using iterative optimization within matching networks, not on general cyclic learning frameworks with variational inference methods.

### 8. VAE-Var: Variational autoencoder-enhanced variational methods for data assimilation in meteorology

**URL**: View paper

**Brief Assessment**

VAE Var[70] focuses on data assimilation in meteorology using variational autoencoders, not on cyclic learning optimization strategies. The candidate addresses weather forecasting background error estimation, which is a fundamentally different problem domain from the original paper's cyclic learning framework.

### 9. Crystal diffusion variational autoencoder for periodic material generation

**URL**: View paper

**Brief Assessment**

Crystal Diffusion VAE[64] focuses on material generation using diffusion models for periodic crystal structures, not on general cyclic learning optimization strategies. The paper does not address cyclic learning tasks or variational methods for such tasks.

### 10. RPI-GGCN: Prediction of RNA-Protein Interaction Based on Interpretability Gated Graph Convolution Neural Network and Co-Regularized Variational Autoencoders

**URL**: View paper

**Brief Assessment**

RPI GGCN[72] focuses on RNA-protein interaction prediction using gated graph convolutional networks and co-regularized variational autoencoders for biological sequence analysis, not on optimization strategies for general cyclic learning tasks with variational methods.

## Contribution 3: Theoretical justification and practical applications across diverse tasks

**Description**: The framework demonstrates broad applicability by theoretically explaining CycleGAN's mechanism and introducing CycleGN for image translation, while proposing CycleTrack variants that achieve state-of-the-art unsupervised tracking performance, establishing theoretical foundations for cyclic learning.

This contribution was assessed against **10 related papers** from the literature. Papers with potential prior art are analyzed in detail with textual evidence; others receive brief assessments.

### 1. Learning correspondence from the cycle-consistency of time

**URL**: View paper

**Brief Assessment**

Cycle Time Correspondence[55] focuses on learning visual correspondence from video using cycle-consistency in time for tasks like segmentation and tracking. The original paper addresses cyclic learning via variational inference for paired/self-cyclic tasks with theoretical foundations. These are fundamentally different problem formulations and application domains.

### 2. Self cycle strategy for unpaired visible-to-infrared image translation

**URL**: View paper

**Brief Assessment**

Self Cycle Infrared[54] focuses specifically on visible-to-infrared image translation using a one-sided unpaired approach, whereas the original paper establishes a general variational inference framework for cyclic learning across multiple tasks including image translation and tracking.

### 3. Self-Supervised Deep Correlation Tracking

**URL**: View paper

**Brief Assessment**

Self Correlation Tracking[58] focuses specifically on self-supervised visual tracking using forward-backward consistency, not on establishing general theoretical foundations for cyclic learning across diverse tasks like image translation and tracking.

### 4. CyTran: A cycle-consistent transformer with multi-level consistency for non-contrast to contrast CT translation

**URL**: View paper

**Brief Assessment**

CyTran[59] focuses specifically on medical image translation between contrast and non-contrast CT scans using cycle-consistent transformers. It does not address theoretical foundations for general cyclic learning frameworks, unsupervised tracking, or provide theoretical explanations for CycleGAN's mechanism as claimed in the original contribution.

### 5. CLIP-based image captioning via unsupervised cycle-consistency in the latent space

**URL**: View paper

**Brief Assessment**

CLIP Cycle Captioning[57] focuses on unsupervised image captioning using cycle-consistency in CLIP's latent space for vision-language translation. The original paper addresses theoretical foundations for cyclic learning across image translation and tracking tasks with variational inference frameworks, which are fundamentally different application domains and theoretical approaches.

### 6. Unsupervised cycle-consistent adversarial attacks for visual object tracking

**URL**: View paper

**Brief Assessment**

Unsupervised Cycle Attacks[60] focuses on adversarial attacks for visual object tracking by maximizing tracking inconsistency, not on establishing theoretical foundations for cyclic learning or developing general frameworks for image translation and unsupervised tracking.

### 7. Unsupervised deep learning-based ground penetrating radar image translation for internal defect recognition of underground engineering structures

**URL**: View paper

**Brief Assessment**

Unsupervised GPR Translation[61] focuses specifically on applying CycleGAN with geometry-consistency constraints to ground penetrating radar image translation for defect detection in underground structures. This is a domain-specific application rather than theoretical foundations or diverse task demonstrations of cyclic learning.

### 8. Cyclenet: Rethinking cycle consistency in text-guided diffusion for image manipulation

**URL**: View paper

**Brief Assessment**

CycleNet[56] focuses on cycle consistency in text-guided diffusion models for image manipulation, not on theoretical foundations for cyclic learning across diverse tasks like image translation and unsupervised tracking as proposed in the original paper.

### 9. UVCGAN v2: An Improved Cycle-Consistent GAN for Unpaired Image-to-Image Translation

**URL**: View paper

**Brief Assessment**

UVCGAN v2[63] focuses exclusively on unpaired image-to-image translation using GANs and diffusion models, without addressing theoretical foundations for cycle-consistency or unsupervised tracking applications.

### 10. Unpaired Image-to-Image Translation Using Cycle-Consistent Adversarial Networks

**URL**: View paper

**Brief Assessment**

CycleGAN[62] focuses on unpaired image-to-image translation using cycle-consistency for visual domain adaptation, not on establishing theoretical foundations for cyclic learning across diverse tasks like tracking and captioning.

## Appendix: Text Similarity Detection

Textual similarity detection checked 26 papers and found 2 similarity segment(s) across 1 paper(s).

The following **1 paper(s)** were detected to have high textual similarity with the original paper. These may represent different versions of the same work, duplicate submissions, or papers with substantial textual overlap. Readers are advised to verify these relationships independently.

### 1. Cycle-consistency learning for captioning and grounding

**Detected in**: Core Task (sibling)

⚠ **Note**: This paper shows substantial textual similarity with the original paper. It may be a different version, a duplicate submission, or contain significant overlapping content. Please review carefully to determine the nature of the relationship.

## References

- [0] Variational Inference for Cyclic Learning View paper
- [1] Cycle-consistency learning for captioning and grounding View paper
- [2] CAM-CycleGAN: A Weakly Supervised Segmentation Method for Medical Images Based on Cycle Consistensy Generative Adversarial Networks View paper
- [3] Consistency label-activated region generating network for weakly supervised medical image segmentation View paper
- [4] Weakly Supervised RGB-D Salient Object Detection With Prediction Consistency Training and Active Scribble Boosting View paper
- [5] Cycle-consistent weakly supervised visual grounding with individual and contextual representations View paper
- [6] Temporal cycle-consistency learning View paper
- [7] Cycle-Consistent Multi-Graph Matching for Self-Supervised Annotation of C.Elegans View paper
- [8] Weakly supervised correspondence learning View paper
- [9] Defect attention template generation cycleGAN for weakly supervised surface defect segmentation View paper
- [10] Cycle and self-supervised consistency training for adapting semantic segmentation of aerial images View paper

- [11] Interleaving One-Class and Weakly-Supervised Models with Adaptive Thresholding for Unsupervised Video Anomaly Detection View paper
- [12] Improving vertical resolution of vintage seismic data by a weakly supervised method based on cycle generative adversarial network View paper
- [13] CyCSNet: Learning Cycle-Consistency of Semantics for Weakly-Supervised Semantic Segmentation View paper
- [14] Cycle-Consistent Generative Rendering for 2D-3D Modality Translation View paper
- [15] A multi-centric evaluation of self-learning GAN based pseudo-CT generation software for low field pelvic magnetic resonance imaging View paper
- [16] Learning Universal Semantic Correspondences with No Supervision and Automatic Data Curation View paper
- [17] Combining Domain Adaptation and Spatial Consistency for Unseen Fruits Counting: A Quasi-Unsupervised Approach View paper
- [18] Exploring Temporal Event Cues for Dense Video Captioning in Cyclic Co-Learning View paper
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- [20] DDM-NET: End-to-end learning of keypoint feature Detection, Description and Matching for 3D localization View paper
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- [23] Informative and consistent correspondence mining for cross-domain weakly supervised object detection View paper
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- [36] Weakly-supervised Generative Adversarial Networks for medical image classification View paper
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- [38] Weakly-supervised learning of human dynamics View paper
- [39] Semantic matching by weakly supervised 2d point set registration View paper
- [40] When Textures Deceive: Weakly Supervised Industrial Anomaly Detection with Adapted-Loss CycleGAN View paper
- [41] Weakly-supervised defect segmentation on periodic textures using CycleGAN View paper
- [42] You Are Your Best Teacher: Semi-Supervised Surgical Point Tracking with Cycle-Consistent Self-Distillation View paper
- [43] Quasi-supervised Learning for Super-resolution PET View paper
- [44] Extracting interpretable features for pathologists using weakly-supervised learning to predict p16 expression in oropharyngeal cancer View paper
- [45] A GPR Resolution Enhancement Method Based on Weakly Supervised Learning View paper
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